Overview	Standards for Mathematical Content	Unit Focus	Standards for Mathematical Practice
Unit 1 **Place Value & Operations with Whole Numbers**	• 4.OA.B.4 • 4.OA.C.5 • 4.MD.A.1 • 4.OA.A.1 • 4.OA.A.2 • 4.NBT.A.1 • 4.NBT.A.2 • 4.NBT.A.3	• Gain familiarity with factors and multiples • Generate and analyze patterns • Solve problems involving measurement and conversion of measurements • Use the four operations with whole numbers to solve problems • Generalize place value understanding for multi-digit whole numbers	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.
Unit 1: ***Suggested Open Educational Resources***	4.OA.B Identifying Multiples 4.OA.B Numbers in a Multiplication Table 4.OA.C.5 Double Plus One 4.MD.A.1 Who is the tallest? 4.OA.A.2 Comparing Money Raised 4.NBT.A.1 Thousands and Millions of Fourth Graders 4.NBT.A.2 Ordering 4-digit numbers 4.NBT.A.3 Rounding on the Number Line		
Unit 2 **Multi-digit Arithmetic &**	• 4.NBT.B.4* • 4.NBT.B.5 • 4.NBT.B.6 • 4.OA.A.3* • 4.MD.A.3 • 4.NF.A.1 • 4.NF.A.2	• Use place value understanding and properties of operations to perform multi-digit arithmetic • Use the four operations with whole numbers to solve problems	

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

Fraction Equivalence	• 4.NF.B.3a-b	• Solve problems involving measurement and conversion of measurements • Extend understanding of fraction equivalence and ordering. • Build fractions from unit fractions	MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.
Unit 2: ***Suggested Open Educational Resources***	4.NBT.B To regroup or not to regroup 4.NBT.B.6 mental Division Strategy 4.OA.A.3, 4.MD.A.3 Karl's Garden 4.NF.A.1 Explaining Fraction Equivalence with Pictures 4.NF.A.1 Fractions and Rectangles 4.NF.A.2 Comparing Fractions Using Benchmarks Game 4.NF.A.2 Doubling Numerators and Denominators 4.NF.B.3a Comparing Sums of Unit Fractions 4.NF.B.3b making 22 Seventeenths in Different Ways		
Unit 3 **Building Fractions & Decimal Notation**	• 4.NF.B.3c-d • 4.MD.B.4 • 4.NF.B.4a-c • 4.NF.C.5 • 4.NF.C.6 • 4.NF.C.7 • 4.MD.A.2 • 4.NBT.B.4*	• Build fractions from unit fractions • Represent and interpret data • Understand decimal notation for fractions and compare decimal fractions. • Solve problems involving measurement and conversion of measurements • Use place value understanding and properties of operations to add and subtract	MP.1 Make sense of problems and persevere in solving them.
Unit 3:	4.NF.B.3c Cynthia's Perfect Punch		

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

Suggested Open Educational Resources	[4.NF.B.3c Peaches](#) [4.MD.B.4 Button Diameters](#) [4.NF.B.4 Extending Multiplication From Whole Numbers to Fractions](#) [4.NF.B.4c Sugar in six cans of soda](#) [4.NF.C.5 Adding Tenths and Hundredths](#) [4.NF.C.6 Dimes and Pennies](#) [4.NF.C.6 Expanded Fractions and Decimals](#) [4.NF.C.7 Using Place Value](#) [4.MD.A.2 Margie Buys Apples](#)		MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.
Unit 4 **Geometry and Measurement**	• 4.G.A.1 • 4.G.A.2 • 4.G.A.3 • 4.MD.C.5 • 4.MD.C.6 • 4.MD.C.7 • 4.OA.A.3* • 4.NBT.B.4*	• Draw and identify lines and angles, and classify shapes by properties of their lines and angles • Understand concepts of angle and measure angles (Geometric measurement) • Use the four operations with whole numbers to solve problems • Use place value understanding and properties of operations to perform multi-digit arithmetic	
Unit 4: ***Suggested Open Educational Resources***	[4.G.A.1 The Geometry of Letters](#) [4.G.A.1 What's the Point?](#) [4.G.A.2 Are these right?](#) [4.G.A.2 Defining Attributes of Rectangles and Parallelograms](#) [4.G.A.3 Finding Lines of Symmetry](#)		

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

	4.G.A.3 Lines of symmetry for triangles 4.MD.C.6, 4.MD.C.7, 4.G.A.1 Measuring Angles 4.MD.C.7, 4.G.A.2 Finding an unknown angle 4.OA.A.3 Carnival Tickets	

21st Century Life and Careers Career Awareness, Exploration, and Preparation	9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals. 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.
CRP Standards	CRP2. Apply appropriate academic and technical skills. CRP4. Communicate clearly and effectively and with reason. CRP6. Demonstrate creativity and innovation. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.
ELA Standards	RI.4.1. Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text. RI.4.4. Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area. RI.4.7. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. W.4.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. SL.4.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly
Technology Standards	8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems 8.1.5.C.1 Engage in online discussions with learners of other cultures to

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

	investigate a worldwide issue from multiple perspectives and sources, evaluate findings and present possible solutions, using digital tools and online resources for all steps. 8.1.5.D.3 Demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media. 8.1.5.E.1 Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks

Unit 1 Grade 4 – Place value and Operations with whole numbers		
Content Standards	**Suggested Standards for Mathematical Practice**	**Transfer**
● 4.OA.B.4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a	MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): ● Whole numbers are a multiple of each of its factors. ● Prime numbers do not have factors other than 1 and the number itself. Students are able to: ● find all factor pairs for any whole number (between 1 and 100).

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

given whole number in the range 1–100 is prime or composite.		• given a one-digit number, determine whether a given whole number (between 1 and 100) is a multiple of the one-digit number. • determine whether a given whole number (between 1 and 100) is prime or composite. Learning Goal 1: Find all factor pairs for a whole number up to 100 and determine whether it is a multiple of a given 1-digit whole number and whether it is prime or composite.
• 4.OA.C.5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	MP.8 Look for and express regularity in repeated reasoning.	Concept(s): • Patterns contain features that are not explicitly stated in the rule defining the numerical pattern. Students are able to: • produce number patterns from a given rule. • produce shape patterns from a given rule. • analyze a sequence of numbers in order to identify features that are not obvious explicitly stated in the rule. Learning Goal 2: Generate a number or shape pattern that follows a rule and identify features of the pattern that are not explicit in the rule.
• 4.MD.A.1. Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36).*	MP.5 Use appropriate tools strategically. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): • Relative sizes of measurements (e.g. a kilometer is 1000 times as long as a meter and 100,000 times as long as a centimeter). Students are able to: • express measurements of a larger unit in terms of a smaller unit (within a single measurement system) (e.g. convert hours to minutes, kilometers to centimeters, etc). • generate a two-column table to record measurement equivalents. Learning Goal 3: Express measurement in a larger unit in terms of a smaller unit and record equivalent measures in a two-column table.

• 4.OA.A.1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.	Concept(s): • Multiplication equations represent comparisons. Students are able to: • explain multiplication equations as comparisons. • write multiplication equations given word problems indicating multiplicative comparison. Learning Goal 4: Write multiplication equations from word problems indicating multiplicative comparisons and describe multiplication equations as comparisons.
• 4.OA.A.2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): No new concept(s) introduced Students are able to: • multiply to solve word problems involving multiplicative comparison. • divide to solve word problems involving multiplicative comparison. • represent problems with drawings and equations, using a symbol for the unknown number. • distinguish word problems involving multiplicative comparison from those involving additive comparison. Learning Goal 5: Multiply and divide to solve word problems involving multiplicative comparisons and represent these problems with drawings and equations.
• 4.NBT.A.1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure.	Concept(s): • A quantitative relationship exists between the digits in place value positions of a multi-digit number. Students are able to: • Explain that a digit in one place represents ten times what it would represent in the place to its right. Learning Goal 6: For a whole number up to one million, explain that a digit in one place represents ten times what it would represent in the place

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

		to its right.
● 4.NBT.A.2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure.	Concept(s): ● Multiple representations of whole numbers exist. Students are able to: ● read and write multi-digit whole numbers using base-ten numerals. ● read and write multi-digit whole numbers using number names. ● read and write multi-digit whole numbers using expanded form. ● compare two multi-digit numbers using >, =, and < symbols. Learning Goal 7: Compare two multi-digit whole numbers (up to one million) using >, =, and < for numbers presented as base ten numerals, number names, and/or in expanded form.
● 4.NBT.A.3. Use place value understanding to round multi-digit whole numbers to any place. ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure.	Concept(s): ● Estimation Students are able to: ● round whole numbers to any place. Learning Goal 8: Round multi-digit whole numbers up to one million to any place.

District/School Formative Assessment Plan	District/School Summative Assessment Plan
● Teacher-Created Assessments ● Homework ● Classwork ● UDL's ● whiteboard activities ● IXL ● Problem of the Day ● Exit Ticket	● Chapter Tests ● Unit Tests ● EdConnect Assessments
Focus Mathematical Concepts	

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

Vocabulary	Instruction and Pacing	
Factors Factor pairs Multiple Prime Composite Variable Place value Rounding Measurement systems (time, weight, mass, distance)	Pretest	1 day
	Factors and factor pairs	1 week
	Patterns	1 week
	Systems of measurements/measurement units	2 weeks
	Multiplicative comparisons in place value	1 week
	Quantitative relationships	1 week
	Reading and writing multi-digit whole numbers…	1 week
	Rounding whole numbers	1 week

ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
● There are various strategies that can be used to solve problems involving multiplication and division. ● Place Value Strategies can be used to solve problems involving multi-digit arithmetic ● Rounding is a process for finding multiples of 10 and 100. ● Multiplication can be used to solve real world measurement problems ● Multiplication is repeated addition	● How are addition and multiplication related? ● How do I decide which strategy to use to solve problems? ● How can rounding be used to estimate sums and differences? ● Why are measurement systems important in real life situations?

Differentiation and Accommodations	District/School Primary and Supplementary Resources
● Provide graphic organizers ● Provide additional examples and opportunities for additional problems for repetition ● Provide tutoring opportunities ● Provide retesting opportunities after remediation (up to teacher and district discretion) ● Teach for mastery not test ● Teaching concepts in different modalities ● Adjust pace and homework assignments	● Go Math!! ● IXL ● Teacher created materials

Instructional Strategies

Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:

- Communicating with students
- Using questioning and discussion techniques
- Engaging students in learning
- Using assessment in instruction
- Demonstrating Flexibility and Responsiveness

Common Misconceptions	Proper Conceptions

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

Multiplication and division are unrelated	Division is an unknown factor problem
Improper ways of rounding	Specific rules to rounding must be followed

Performance Task

Your family has just developed 24 photos from your vacation. They want you to organize the photos into an arrangement of equal rows and columns for a family poster. Draw a plan that shows 2 different ways to organize your photos. Choose one of your plans and write the repeated addition equation, and the related multiplication equation. Explain how your drawing relates to multiplication.

Rubric

3 – Student will be able to demonstrate/draw two arrays to display the family photos into equal groups. (e.g. 4 rows of 6 and 8 rows of 3). Student will write a repeated addition equation for one of the arrays and the related multiplication equation. Student clearly explains their answer in a sentence, in a series of steps or labels their drawings and equations.

2 – Student will demonstrate/draw at least one correct array with the correct repeated addition sentence and related multiplication fact with some explanation.

1 – Student will demonstrate/draw one or two ways to organize photos into equal groups/arrays, excluding repeated addition or multiplication equations, or writes incorrect equations.

0 – Student shows little or no evidence of organizing photos

Unit 2 Grade 4 – Multi-digit arithmetic and fractional equivalence		
Content Standards	**Suggested Standards for Mathematical Practice**	**Transfer**
• 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. rade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked)	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): No new concept(s) introduced Students are able to: • add multi-digit whole numbers using the standard algorithm with accuracy and efficiency. • subtract multi-digit whole numbers using the standard algorithm with accuracy and efficiency. Learning Goal 1: Fluently add and subtract multi-digit whole numbers using the

		standard algorithm.
• 4.NBT.B.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure.	Concept(s): No new concept(s) introduced Students are able to: • multiply a whole number of up to four digits by a one-digit whole number using strategies based on place values. • multiply two two-digit numbers using strategies based on place value. • represent these operations with equations, rectangular arrays, and area models. • explain the calculation by referring to the model (equation, array, or area model). Learning Goal 2: Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers; represent and explain calculations using equations, rectangular arrays, and area models.
• 4.NBT.B.6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]	MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): No new concept(s) introduced Students are able to: • find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and the relationship between multiplication and division. • represent these operations with equations, rectangular arrays, and area models. • explain the calculation by referring to the model (equation, array, or area model). Learning Goal 3: Divide a whole number of up to four-digits by a one-digit divisor; represent and explain the calculation using equations,

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

		rectangular arrays, and area models.
● 4.OA.A.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. *(benchmarked)	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.7 Look for and make use of structure.	Concept(s): ● Proper use of the equal sign ● Improper use of the equal sign (e.g. 3 + 7 = 10 – 5 = 5 is incorrect) Students are able to: ● solve multi-step word problems involving any of the four operations. ● solve multi-step word problems involving interpretation (in context) of a remainder. ● write equations to represent multi-step word problems, using a letter to represent the unknown quantity. ● explain why an answer is reasonable. ● use mental computation and estimation strategies to determine whether an answer is reasonable. Learning Goal 4: Write and solve each equation (including any of the four operations) in order to solve multi-step word problems, using a letter to represent the unknown; interpret remainders in context and assess the reasonableness of answers using mental computation with estimation strategies.
● 4.MD.A.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	MP.2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically.	Concept(s): No new concept(s) introduced Students are able to: ● solve real world and mathematical problems by finding the area of rectangles using a formula. ● solve real world and mathematical problems by finding the perimeter of rectangles using a formula. Learning Goal 5: Solve real world problems with whole numbers by finding the area and perimeter of rectangles using formulas.
● 4.NF.A.1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics.	Concept(s): ● Equivalent fractions are the same size while the number and size of the parts differ.

even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Students are able to: ● explain, using visual fraction models, why two fractions are equivalent. ● generate equivalent fractions, using fraction a/b as equivalent to fraction $(n \times a)/(n \times b)$. Learning Goal 6: Recognize and generate equivalent fractions and explain why they are equivalent using visual fraction models.
● 4.NF.A.2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): ● Fractions may only be compared when the two fractions refer to the same whole. Students are able to: ● create common denominators in order to compare two fractions. ● create common numerators in order to compare two fractions. ● compare two fractions with different numerators and different denominators by comparing to a benchmark fraction. ● record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. Learning Goal 7: Compare two fractions with different numerators or different denominators, recording comparison with >, =, or <, and justifying the conclusion using visual fraction models.
● 4.NF.B.3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. 4.NF.B.3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. 4.NF.B.3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ;*	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): ● Some fractions can be decomposed. ● Addition/subtraction of fractions is joining/separating parts referring to the same whole. Students are able to: ● decompose a fraction into a sum of fractions with the same denominator in more than one way. ● write decompositions of fractions as an equation. ● develop visual fraction models that represent decomposed fractions and use them to justify decompositions.

3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8. ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.6 Attend to precision. MP.7 Look for and make use of structure.	Learning Goal 8: Decompose a fraction into a sum of fractions with the same denominator in more than one way and record the decomposition as an equation; justify the decomposition with a visual fraction model.

District/School Formative Assessment Plan	District/School Summative Assessment Plan
• Teacher-Created Assessments • Homework • Classwork • UDL's • whiteboard activities • IXL • Problem of the Day • Exit Ticket	• Chapter Tests • Unit Tests • EdConnect Assessments

Focus Mathematical Concepts

Vocabulary	Instruction and Pacing	
Multi-digit whole numbers Area Perimeter Rectangle Fraction Equivalent fractions Comparing Decomposing fractions Denominator Numerator Array Quotient	Pretest	1 day
	Adding and subtracting multi-digit whole numbers	1 week
	Multiplying whole numbers	1 week
	Dividing whole numbers	1 week
	Word problems using + - x / to solve	1 week
	Area and perimeter of rectangles	2 weeks
	Equivalent fractions	1 week
	Comparing fractions	1 week
	Decomposing fractions into equations with like denominators	1 week
ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS	

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

• There are various strategies that can be used to solve problems involving multiplication and division. • Area is the space inside a figure • Perimeter is the distance around a figure • Fractions can be equivalent despite having different denominators	• How are addition and multiplication related? • How do I decide which strategy to use to solve problems? • How is knowing how to add subtract multiply and divide multi-digit numbers important in real life? • Why might I need to find the area and/or perimeter of a rectangle in real life?

Differentiation and Accommodations	District/School Primary and Supplementary Resources
• Provide graphic organizers • Provide additional examples and opportunities for additional problems for repetition • Provide tutoring opportunities • Provide retesting opportunities after remediation (up to teacher and district discretion) • Teach for mastery not test • Teaching concepts in different modalities • Adjust pace and homework assignments	• Go Math!! • IXL • Teacher created materials

Instructional Strategies

Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:

- Communicating with students
- Using questioning and discussion techniques
- Engaging students in learning
- Using assessment in instruction
- Demonstrating Flexibility and Responsiveness

Common Misconceptions	Proper Conceptions
Area and perimeter are often confused	Area and perimeter each have their own specific formulas
Fractions cannot be equal if they have different numerators and/or denominators	There are many ways fractions can be equal

Performance Task

Use the fraction model below to complete the following:

- **Label the numerical value of each row**
- **Analyze the fraction bar and list all fractions that are equivalent to ½.**
- **Analyze the fraction bar and list 3 fractions equivalent to ¼.**
- **List 3 fractions that are close to ½ but not more than**
- **List 3 fractions that are close to 1 whole, but not more than**
- **Find 2 fractions that are closest to 0**

Rubric : ½ point for each correct bullet

Unit 3 Grade 4 – Building fractions and decimal notation		
Content Standards	**Suggested Standards for Mathematical Practice**	**Transfer**
● 4.NF.B.3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. 4.NF.B.3c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. 4.NF.B.3d. Solve word problems involving addition and	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools	Concept(s): ● Some fractions can be decomposed. ● Addition/subtraction of fractions is joining/separating parts referring to the same whole. Students are able to: ● add and subtract fractions having like denominators in order to solve real world problems. ● develop visual fraction models and write equations to represent real world problems involving addition and subtraction of fractions.

subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	• add and subtract mixed numbers with like denominators. Learning Goal 1: Add and subtract mixed numbers with like denominators by replacing each mixed number with an equivalent fraction or improper fraction. Learning Goal 2: Solve word problems involving addition and subtraction of fractions having like denominators using visual fraction models and equations to represent the problem.
• 4.MD.B.4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): No new concept(s) introduced Students are able to: • given a data set consisting of measurements in fractions of a unit, create a line plot. • using measurement information presented in line plots, add and subtract fractions with like denominators in order to solve problems. Learning Goal 3: Make a line plot to display a data set in measurements in fractions of a unit (1/2, 1/4, 1/8) and use it to solve problems involving addition and subtraction of fractions with like denominators.
• 4.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. 44.NF.B.4a. Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* 4.F.4.B.4b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction*	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): • Fraction Multiplication: any fraction a/b as a multiple of fraction $1/b$. • Fraction Multiplication: any multiple of fraction a/b is also a multiple of fraction $1/b$. Students are able to: • represent a/b as a x $(1/b)$ using a visual fraction model. • represent $n \times (a/b)$ as $(n \times a)/b$ in a visual fraction model. • multiply a fraction by a whole number. • solve real world problems by multiplying a fraction by a whole number, using visual fraction models and equations to represent the problem. Learning Goal 4: Multiply a fraction by a whole number using visual fraction models and equations, demonstrating a fraction a/b as a

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.) 4.NF.4.B.4c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?* ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]		multiple of 1/*b*. Learning Goal 5: Multiply a fraction by a whole number, using a visual fraction model and equations to demonstrate that a multiple of *a*/*b* is the product of 1/*b* and a whole number. Learning Goal 6: Solve 1-step word problems involving multiplication of a fraction by a whole number, using visual fraction models and equations to represent the problem
● 4.NF.C.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.7 Look for and make use of structure.	Concept(s): ● Equivalent Fractions Students are able to: ● add two fractions with respective denominators of 10 and 100 using equivalent fractions. Learning Goal 7: Add two fractions with respective denominators of 10 and 100 by writing each fraction with denominator 100.
● 4.NF.C.6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.7 Look for and make use of structure.	Concept(s): ● Relationship between place value (decimals) and fraction Students are able to: ● write a decimal as a fraction that has a denominator of 10 or 100. Learning Goal 8: Given decimal notation, write fractions having denominators of 10 or 100.

• 4.NF.C.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. ade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): No new concept(s) introduced Students are able to: • represent a decimal using a model. • compare two decimals to hundredths by reasoning about their size. • explain that comparisons are valid only when the two decimals refer to the same whole. • record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model). Learning Goal 9: Compare two decimals to hundredths by reasoning about their size, demonstrating that comparisons are valid only when the two decimals refer to the same whole; record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.
• 4.MD.A.2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): No new concept(s) introduced Students are able to: • solve word problems (using addition, subtraction and multiplication) involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals. • solve word problems (using all four operations) involving whole number distances, intervals of time, liquid volumes, masses of objects, and money, including problems requiring expressing measurements given in a larger measurement unit in terms of a smaller measurement unit (conversion). • construct diagrams (e.g. number line diagrams) to represent measurement quantities. Learning Goal 10: Solve word problems involving simple fractions or decimals that incorporate measurement comparisons of like units (including problems that require measurements given in a larger unit in terms of a smaller unit).

• 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked)	MP.7 Look for and make use of structure.	Concept(s): No new concept(s) introduced Students are able to: • add using the standard algorithm with accuracy and efficiency. • subtract using the standard algorithm with accuracy and efficiency. Learning Goal 11: Fluently add and subtract multi-digit whole numbers using the standard algorithm.

District/School Formative Assessment Plan	District/School Summative Assessment Plan
• Teacher-Created Assessments • Homework • Classwork • UDL's • whiteboard activities • IXL • Problem of the Day • Exit Ticket	• Chapter Tests • Unit Tests • EdConnect Assessments

Focus Mathematical Concepts

Vocabulary	Instruction and Pacing	
Mixed number Line plot Fraction Denominator Decimal Compare	Pretest	1 day
	Add and subtract mixed numbers	2 weeks
	Line plots	1 week
	Multiply fractions by whole numbers	1 week
	Add fractions	2 weeks
	Add fractions with 10 and 100 as denominators	1 week
	Use decimal notation for fractions with 10&100 as denimonator	1 week
	Compare decimals	1 week
	Solve word problems	1 week

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
• Mixed numbers are commonly used in real life • Multiplying fractions by whole numbers often results in smaller products • Comparing decimals is essential especially in money situations	• When would mixed numbers be used and what do they represent? • How can a line plot display data?

Differentiation and Accommodations	District/School Primary and Supplementary Resources

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

• Provide graphic organizers • Provide additional examples and opportunities for additional problems for repetition • Provide tutoring opportunities • Provide retesting opportunities after remediation (up to teacher and district discretion) • Teach for mastery not test • Teaching concepts in different modalities • Adjust pace and homework assignments	• Go Math!! • IXL • Teacher created materials

Instructional Strategies

Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:

- Communicating with students
- Using questioning and discussion techniques
- Engaging students in learning
- Using assessment in instruction
- Demonstrating Flexibility and Responsiveness

Common Misconceptions	Proper Conceptions
When adding and subtracting fractions students add the denominators	Visual models or number lines help to see you are adding the parts (numerator) only to the whole which remains the same (denominator)
The larger the denominator the larger the fraction.	A large denominator indicates smaller parts
Fractions are not numbers	Fractions are numbers representing values less than one or parts of sets
If denominators are even they are equivalent fractions	Equivalent fractions can be found using number lines to compare values
Students confuse the greater and less than sign when comparing fractions	The same rules apply with the greater and less than sign when comparing fractions as whole numbers.
Students have difficulty finding fractions close to ½ or ¼	Number lines help us to benchmark the value and size of the fractions
Students have difficulty connecting fractions to decimal equivalents	Decimals show fractional parts of a whole
Decimal Place value is different than whole number place value	Decimal place value can be connected to money
Students order decimals incorrectly	Compare the whole number then the tenths first when comparing decimals
Students have difficulty seeing or explaining how to round decimals	Using a number line can help visualize where a decimal rounds to

Performance Task

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

A scientist measures the lengths of 10 insects. The data is in the table below.

a) Make a line plot to show the data using a number line for the base of the line plot numbered from 0 to 1.

b) What is the mode of the data set? How do you know?

c) How much longer is the longest insect than the shortest insect? Show your work

3/8 inch	1/8 inch	7/8 inch	4/8 inch	3/8 inch
5/8 inch	1 inch	2/8 inch	5/8 inch	5/8 inch

Rubric: One point for each correct bullet.

Unit 4 Grade 4 – Geometry and Measurement		
Content Standards	**Suggested Standards for Mathematical Practice**	**Transfer**
● 4.G.A.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): No new concept(s) introduced Students are able to: ● draw points, lines, line segments and rays. ● draw angles (right, acute, obtuse). ● draw perpendicular and parallel lines. ● distinguish between lines, line segments, and rays. ● identify points, lines, line segment, rays, right angles, acute angles,

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

		obtuse angles, perpendicular lines and parallel lines in two-dimensional figures. Learning Goal 1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines and identify these in two-dimensional figures.
● 4.G.A.2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): ● Trapezoid is a quadrilateral with at least one pair of parallel sides. Students are able to: ● classify triangles based on the presence or absence of perpendicular lines and based on the presence or absence of angles of a particular size. ● classify quadrilaterals based on the presence or absence of parallel or perpendicular lines and based on the presence or absence of angles of a particular size. Learning Goal 2: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a particular size; recognize right angles as a category, and identify right, acute, obtuse, equilateral, isosceles, and scalene triangles.
● 4.G.A.3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): No new concept(s) introduced Students are able to: ● fold a figure along a line in order to create matching parts. ● identify lines of symmetry as a line across the figure such that the figure can be folded along the line into matching parts. ● identify figures having line symmetry. ● draw lines of symmetry. Learning Goal 3: Draw lines of symmetry and identify line-symmetric figures.
● 4.MD.C.5. Recognize angles as geometric shapes that are formed wherever two rays share a common	MP.2 Reason abstractly and quantitatively.	Concept(s): ● Angles are formed by two rays sharing a common endpoint and result

endpoint, and understand concepts of angle measurement. 4.MD.C.5a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. 4.MD.C.5b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.		from the rotation of one ray around the endpoint. ● Angle Measurement: An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. Students are able to: ● describe an angle as measured with reference to a circle with the center of the circle being the common endpoint of the rays. ● explain a 'one-degree angle' and its relation to a circle; a "degree" is defined as 1/360 (one degree angle) of the entire circle. Learning Goal 4: Explain angles as geometric shapes formed by two rays sharing a common endpoint and explain the relationship between a one-degree angle, a circle, and angle measure.
● 4.MD.C.6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	MP.2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically.	Concept(s): No new concept(s) introduced Students are able to: ● measure angles in whole-number degrees. ● given an angle measure, sketch the angle. Learning Goal 5: Measure angles in whole number degrees using a protractor and sketch angles of specific measures.
● 4.MD.C.7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	MP.1 Make sense of problems and persevere in solving them. MP.7 Look for and make use of structure.	Concept(s): ● Angle measures may be added; when an angle is decomposed into non-overlapping parts, the angle measure of the whole (original angle) is the sum of the angle measures of the parts. Students are able to: ● add and subtract to find unknown angles on a diagram in real world and mathematical problems. ● write an equation with a symbol for the unknown angle measure. Learning Goal 6: Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems

		using a symbol for an unknown angle measure.
● 4.OA.A.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. *(benchmarked)	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.7 Look for and make use of structure.	Concept(s): ● Proper use of the equal sign. ● Improper use of the equal sign (e.g. 3 + 7 = 10 – 5 = 5 is incorrect). Students are able to: ● solve multi-step word problems involving any of the four operations. ● solve multi-step word problems involving interpretation (in context) of a remainder. ● write equations to represent multi-step word problems, using a letter to represent the unknown quantity. ● explain why an answer is reasonable. ● use mental computation and estimation strategies to determine whether an answer is reasonable. Learning Goal 7: Write and solve each equation (including any of the four operations) in order to solve multi-step word problems, using a letter to represent the unknown; interpret remainders in context and assess the reasonableness of answers using mental computation with estimation strategies.
● 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. ade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked)	MP.7 Look for and make use of structure.	Concept(s): No new concept(s) introduced Students are able to: ● add using the standard algorithm with accuracy and efficiency ● subtract using the standard algorithm with accuracy and efficiency Learning Goal 8: Fluently add and subtract multi-digit whole numbers using the standard algorithm

District/School Formative Assessment Plan	District/School Summative Assessment Plan
● Teacher-Created Assessments ● Homework ● Classwork ● UDL's	● Chapter Tests ● Unit Tests ● EdConnect Assessments

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

- whiteboard activities
- IXL
- Problem of the Day
- Exit Ticket

Focus Mathematical Concepts

Vocabulary	Instruction and Pacing	
Angle degree clockwise counter-clockwise Whole-number algorithm acute obtuse Right-angle line line -segment ray Parallel and perpendicular lines Two-dimensional figure Right-triangle protractor Line of symmetry	Pretest	1 day
	Draw points, lines, rays, etc	1 week
	Classify 2-d figures	1 week
	Lines of symmetry	1 week
	Angles	3 weeks
	Word problems Add and subtract multi-digit numbers	1 week 1 week

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Adding and subtracting multi-digit whole numbers is a necessary skill when solving problems in geometry .	When would you need to add or subtract multi-digit whole numbers in geometry?

Differentiation and Accommodations	District/School Primary and Supplementary Resources
• Provide graphic organizers • Provide additional examples and opportunities for additional problems for repetition • Provide tutoring opportunities • Provide retesting opportunities after remediation (up to teacher and district discretion) • Teach for mastery not test • Teaching concepts in different modalities • Adjust pace and homework assignments	• Go Math!! • IXL • Teacher created materials

Instructional Strategies

Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited

Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard

to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:

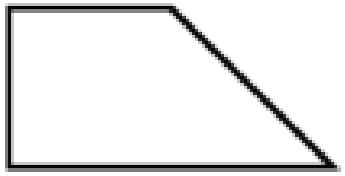
- Communicating with students
- Using questioning and discussion techniques
- Engaging students in learning
- Using assessment in instruction
- Demonstrating Flexibility and Responsiveness

Common Misconceptions	Proper Conceptions
Clockwise and counterclockwise get mixed up	Clockwise turns to the right while counterclockwise turns to the left
Degrees are only used to signify temperature	Degrees are also used to measure angles
A line of symmetry can be drawn through any figure	Figures only have a line of symmetry if it can be folded along the line into matching parts
The angles in right triangles have a sum of 90 degrees	Like all triangles, the sum of the angles in a right triangle is 180 degrees

Performance Task

The figure below shows Trapezoid RSTU

- Name one right angle in trapezoid RSTU:
- Name one acute angle in trapezoid RSTU:
- Name one obtuse angle in trapezoid RSTU:
- Name one pair of parallel line segments in trapezoid RSTU:
- Name one pair of perpendicular line segments in trapezoid RSTU:
- Does trapezoid RSTU have line of symmetry?



Key: Major Clusters | Supporting | Additional Clusters | * Benchmarked Standard